

## **CLAIMS**

What is claimed is:

1 1. A method comprising:  
2 receiving a data segment representing a digitized segment of voice data associated  
3 with a voice channel;  
4 assigning a unique segment ID to the voice channel associated with the digitized  
5 segment of voice data; and  
6 arranging a set of four segment IDs and a corresponding set of four data segments  
7 into a quad segment so that the four segment IDs and each of the four data segments are  
8 explicitly aligned on an eight-byte boundary.

1 2. The method of claim 1, further comprising:  
2 prepending a local area network (LAN) header to the quad segment to create a  
3 multi-channel voice packet; and  
4 transmitting the multi-channel voice packet over a local area network (LAN).

1 3. The method of claim 2, wherein the LAN is an Ethernet, and the LAN header is a  
2 media access control (MAC) header.

1 4. The method of claim 2, wherein the LAN is an InfiniBand ® system network.

1 5. The method of claim 2, further comprising aggregating as many quad segments  
2 into the multi-channel voice packet as possible so that a size of the multi-channel voice  
3 packet does not exceed the maximum size for the LAN.

1 6. The method of claim 1, wherein the digitized segment of voice data is at least one  
2 sample of pulse-code modulated (PCM) voice data.

1 7. The method of claim 6, wherein the at least one sample of PCM voice data is one  
2 byte in length and represents substantially 125 microseconds of voice data.

1 8. The method of claim 6, wherein the digitized segment of voice data comprises  
2 eight samples of PCM voice data for a total of eight bytes in length.

1 9. The method of claim 1, wherein the data segment is obtained from a time-division  
2 multiplexed (TDM) stream of voice data.

1 10. The method of claim 1, wherein the data segment is obtained from a  
2 asynchronous transfer multiplexed (ATM) stream of voice data.

1 11. The method of claim 1, wherein the data segment is obtained from a payload of a  
2 data packet.

1 12. The method of claim 11, wherein the data packet is an Real Time Protocol (RTP)  
2 packet.

1 13. The method of claim 1, wherein the unique segment ID is 2 bytes in length, the  
2 unique segment ID explicitly identifying the voice channel without reference to other  
3 data.

1 14. A computer-readable medium having executable instructions to cause a computer  
2 to perform a method comprising:

3 receiving a data segment representing a digitized segment of voice data associated  
4 with a voice channel;

5 assigning a unique segment ID to the voice channel associated with the digitized  
6 segment of voice data; and

7 arranging a set of four segment IDs and a corresponding set of four data segments  
8 into a quad segment so that the four segment IDs and each of the four data segments are  
9 explicitly aligned on an eight-byte boundary.

1 15. The computer-readable medium of claim 14, wherein the method further  
2 comprises:

3 prepending a local area network (LAN) header to the quad segment to create a  
4 multi-channel voice packet; and

5 transmitting the multi-channel voice packet over a local area network (LAN).

1 16. The computer-readable medium of claim 15, wherein the LAN is an Ethernet, and  
2 the LAN header is a media access control (MAC) header.

1 17. The computer-readable medium of claim 15, wherein the LAN is an InfiniBand ®  
2 system network.

1 18. The computer-readable medium of claim 15, wherein the method further  
2 comprises aggregating as many quad segments into the multi-channel voice packet as  
3 possible so that a size of the multi-channel voice packet does not exceed the maximum  
4 size for the LAN.

1 19. The computer-readable medium of claim 14, wherein the digitized segment of  
2 voice data is at least one sample of pulse-code modulated (PCM) voice data.

1 20. The computer-readable medium of claim 19, wherein the at least one sample of  
2 PCM voice data is one byte in length and represents substantially 125 microseconds of  
3 voice data.

1 21. The computer-readable medium of claim 20, wherein the digitized segment of  
2 voice data comprises eight samples of PCM voice data for a total of eight bytes in length.

1 22. The computer-readable medium of claim 14, wherein the data segment is obtained  
2 from a time-division multiplexed (TDM) stream of voice data.

1 23. The computer-readable medium of claim 14, wherein the data segment is obtained  
2 from a asynchronous transfer multiplexed (ATM) stream of voice data.

1 24. The computer-readable medium of claim 14, wherein the data segment is obtained  
2 from a payload of a data packet.

1 25. The computer-readable medium of claim 24, wherein the data packet is an Real  
2 Time Protocol (RTP) packet.

1 26. The computer-readable medium of claim 14, wherein the unique segment ID is 2  
2 bytes in length, the unique segment ID explicitly identifying the voice channel without  
3 reference to other data.

1 27. An apparatus comprising:  
2 a data segment receiver to receive a data segment having a digitized segment of  
3 voice data;  
4 a voice channel identifier to determine which of a plurality of voice channels is  
5 associated with the data segment and to generate an associated segment ID;  
6 a data segment aggregator to arrange a set of four contiguous segment IDs  
7 followed by a corresponding set of four contiguous data segments into a quad segment so  
8 that the set of four contiguous segment IDs and each of the four contiguous data  
9 segments of the quad segment are explicitly aligned on an eight-byte boundary.

1 28. The apparatus of claim 27, further comprising:  
2 a multi-channel voice packet generator to prepend a local area network (LAN)  
3 header to the quad segment to create a multi-channel voice packet; and  
4 a packet transmitter to transmit the multi-channel voice packet over a local area  
5 network (LAN).

1 29. The apparatus of claim 28, wherein the LAN is an Ethernet, and the LAN header  
2 is a media access control (MAC) header.

1 30. The apparatus of claim 28, wherein the LAN is an InfiniBand ® system network.

1 31. The apparatus of claim 28, wherein the multi-channel voice packet generator  
2 further aggregates as many of the quad segments into the multi-channel voice packet as  
3 possible so that a size of the multi-channel voice packet does not exceed the maximum  
4 packet size for the LAN.

1 32. The apparatus of claim 28, wherein the digitized segment of voice data is at least  
2 one sample of pulse-code modulated (PCM) voice data.

1 33. The apparatus of claim 32, wherein the at least one sample of PCM voice data is  
2 one byte in length and represents substantially 125 microseconds of voice data.

1 34. The apparatus of claim 32, wherein the digitized segment of voice data comprises  
2 eight samples of PCM voice data for a total of eight bytes in length.

1 35. The apparatus of claim 27, wherein the data segment is obtained from a time-  
2 division multiplexed (TDM) stream of voice data.

1 36. The apparatus of claim 27, wherein the data segment is obtained from an  
2 asynchronous transfer multiplexed (ATM) stream of voice data.

1 37. The apparatus of claim 27, wherein the data segment is obtained from a payload  
2 of a data packet.

1 38. The apparatus of claim 37, wherein the data packet is a Real Time Protocol (RTP)  
2 packet.

1 39. The apparatus of claim 27, wherein the segment ID is 2 bytes in length, the segment  
2 ID explicitly identifying the voice channel without reference to other data.

1 40. A computer-readable medium having stored thereon a data structure, the data  
2 structure comprising:  
3 a segment ID representing an identification of a voice channel; and

4           a data segment representing a digitized segment of voice data associated with the  
5           voice channel, wherein the segment ID and the data segment are each positioned to align on  
6           an 8-byte boundary.

1       41.    The computer-readable medium of claim 40, wherein four consecutive segment IDs  
2       are followed by four corresponding consecutive data segments to form a quad segment,  
3       wherein the quad segment is positioned so that the four segment IDs together align on an 8-  
4       byte boundary and each of the corresponding four data segments align on an 8-byte  
5       boundary.

1       42.    The computer-readable medium of claim 41, wherein the data structure further  
2       comprises a local area network (LAN) header representing a destination address associated  
3       with the voice channel.

1       43.    The computer-readable medium of claim 41, wherein the segment ID is 2 bytes in  
2       length, the segment ID explicitly identifying the voice channel without reference to other  
3       data.

1       44.    The computer-readable medium of claim 42, wherein the data structure comprises as  
2       many of the quad segments as possible without exceeding the maximum length allowed for  
3       the LAN associated with the LAN header.

1 45. A method comprising:

2 means for receiving a data segment representing a digitized segment of voice

3 data;

4 means for assigning a unique segment ID to the voice channel associated with the

5 digitized segment of voice data; and

6 means for arranging a set of four segment IDs and a corresponding set of four

7 data segments into a quad segment so that the four segment IDs and each of the four data

8 segments are explicitly aligned on an eight-byte boundary.

1 46. The method of claim 45, further comprising:

2 means for prepending a local area network (LAN) header to the quad segment to

3 create a multi-channel voice packet; and

4 means for transmitting the multi-channel voice packet over a local area network

5 (LAN).

1 47. The method of claim 46, wherein the LAN is an Ethernet, and the LAN header is

2 a media access control (MAC) header.

1 48. The method of claim 47, further comprising means for aggregating as many of the

2 quad segments into the multi-channel voice packet as possible so that a size of the multi-

3 channel voice packet does not exceed the maximum packet size on the LAN.